

SUMMARY

The degree of endemism in the nine major plant associations on a transect through western and central Oregon is compared with annual precipitation, summer precipitation, January minimum temperature and summer maximum temperature in the same associations. It is found that the higher percentages of endemism occur in those associations in which the greater number of climatic factors reach one of their extremes. The hypothesis is advanced that the degree of endemism in the flora of a given area is directly correlated with the total number of environmental factors reaching their extremes in the area. It is pointed out that the centers of floral areas richest in endemic species coincide with areas in which occur the end points of a number of climatic gradients, and it is suggested that taxonomic and distributional studies be based upon geographic areas constituted along these lines.

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LITERATURE CITED

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NOTEWORTHY SOUTH AMERICAN PLANTS, I AND II

PAUL C. STANDLEY AND FRED A. BARKLEY

In working over portions of recent collections of plants from Peru and Bolivia collected by H. E. Stork, O. B. Horton, W. J. Eyerdam, J. Soukup S. S., C. Vargas C., and T. H. Goodspeed, five specimens have appeared which are sufficiently distinct from the known species of that area that they seem worthy of description.

The types of these are all deposited in the Herbarium of the Chicago Natural History Museum.

Phoradendron Storkii Barkley, sp. nov. Frutex glaber, parasiticus, dioicus; foliis coriaceis, lanceolatis, oppositis, 130 mm. longis, 20 mm. latis, basi cuneatis, decurrentibus, subsessilibus, apice obtusis, 3-5-nerviis; cataphyllis 2, late deltoideis, ad nodum primum ramis primarii; internodiis basi tetragulis (infinis exceptis), apice planis et late alatis (alis caulibus latitudine aequantibus); inflorescentiis erectis et in axillis foliorum solitariis; pedunculis circa 5 mm. longis; bracteis 2 inflorescentiam subtendentibus; inflorescentiis 1 ad 3 cm. longis; petalis 3.

Shrubby, dioecious parasite on trees with stems to 60 cm. long, nodes of stem yellow and the remainder of stem and leaves chlorophyll green; leaves thinly coriaceous, lanceolate, opposite, 130 ±

mm. long, $20 \pm$ broad, base cuneate, decurrent, subsessile, tapering gradually to the narrowly obtuse apex, 3 to 5 nerved from near the base; a pair of very broadly deltoid cataphylls at the first node of each main branch; all but the lowest internodes obscurely tetragonal at the base becoming flattened and broadly alate at the apex (the wings equal to the stem in width); inflorescences erect and solitary in the axils of the leaves; peduncles about 5 mm. long; a pair of broadly deltoid bracts subtending the inflorescence; inflorescence 1 to 3 cm. long; petals 3; fruit white, cylindric-ovoid, 2.5 mm. long, 1.5 mm. broad.

Type. Altitude 3200 m., 10 km. northwest of Socota, Depto. Cajamarca, Peru, December 10, 1938, *H. E. Stork & O. B. Horton 10133*.

This species apparently is closely related to *Phoradendron Mathewsi* Trel. and *P. semiteres* Trel., but it differs in leaf, stem, and inflorescence characters.

Cleome Eyerdamii Standley & Barkley, sp. nov. Suffrutex, 10 ad 30 cm. altus; foliis trifoliolatis; foliolis 3 (–5?), obovatis, 1–3 cm. longis, cuneatis, sessilibus, ad apicem subacutis; pedicellis circa 1.5 cm. longis, puberulentis glandulosis; capsulis glabris, circa 2 cm. longis, 3–5 mm. latis; stipitibus circa 1 mm. longis.

Bush or perennial herb 10 to 30 cm. tall with woody stem and peculiar odor; leaves trifoliolate, petiole slightly exceeding the lamina in length; leaflets 3 (–5?), obovate, 1–3 cm. long, half as wide, cuneate, sessile, at apex subacute; a pair of short stipular spines at the base of the petiole; stems, leaves, bracts, and pedicels densely glandular puberulent; bracts conspicuous, persistent, ovate, about 1 cm. long, subsessile; sepals broadly lanceolate, half as long as the petals, glandular puberulent; petals white, clawed, obovate, about 6 mm. long; pedicels in fruit about 1.5 cm. long, glandular puberulent; fruit glabrous, stipe about 1 cm. long, capsule about 2 cm. long, 3–5 mm. broad.

Type. About 5 km. southeast of Cochabamba, Depto. Cochabamba, Bolivia, March 20, 1939, *W. J. Eyerdam 24917*.

This species is similar to *Cleome psoraleaefolia* DC., but differs most notably in the glabrous fruit, in its capsules which are only about half as long, in its dense glandular puberulence in contrast to the sparse long pubescence, and in its more broadly ovate bracts which are less acute at the apex.

Psittacanthus Hortonii Standley & Barkley, sp. nov. Frutex parasiticus ad 60 cm. altus, glaber, paulum ramosus; ramis longis, laevibus, sparse striatis; foliis alternatis, cuneato-obovatis, 25 mm. longis, 9–16 mm. latis, viridibus aliquid glaucis, subsessilibus, truncatis, ad apicem emarginatis, mucrone nigro parvo; floribus 1–3, axillaribus, pedicellis erectis, circa 5 mm. longis; petalis 6, rubris, linearibus, acutis, primo coalescentibus, deinde parte



PLATE 20. TYPES OF SOUTH AMERICAN PLANTS. A. *Psittacanthus Hortonii* Standl. and Barkl. B. *Cleome Eyerdamii* Standl. and Barkl. C. *Beloperone Soukupii* Standl. and Barkl. (Deposited in the Herbarium of Chicago Natural History Museum.)

supera valde reflexa; filamentis filiformibus, subulatis, petala aequantibus; antheris flavis; fructu fulgente, nigro, globoso, circa 7 mm. longo.

Parasitic shrub to 60 cm., glabrate, little branched, branches long, smooth, scarcely striate; leaves alternate, cuneate-obovate, 25 mm. long, 9 to 16 mm. broad, green but somewhat glaucous, coriaceous, three-nerved from the base, subsessile, truncate, emarginate at apex with a small black mucro about 0.5 mm. long; flowers scarlet, axillary, 1 to 3, the pedicels erect, about 5 mm. long; cup about 2.5 mm. deep, with three deltoid teeth; calyx 4 mm. long, 2 mm. broad, margin entire; petals 6, scarlet, linear, acute, at first coalescent, later with upper third strongly reflexed; filaments filiform, subulate, adnate to the petals two-thirds of their length, equalling the petals in length; anthers yellow, versatile, two celled, opening by two longitudinal slits, 4 mm. long; stigma capitate, style filiform, 25 mm. long; fruit shiny, purplish black, globose, about 7 mm. long.

Type. Huacho, 8 km. north of Huánuco, Depto. and Prov. Huánuco, Peru, October 15, 1938, *H. E. Stork & O. B. Horton 9400*.

This plant is closely related to *Psittacanthus cuneifolius* (R. & P.) G. Don, from which it differs most markedly in the leaves which are three to five times as broad as in that species. There is no indication of the swelling at the nodes which is usually seen in *P. cuneifolius*.

Beloperone Soukupii Standley & Barkley, sp. nov. Herba perennis, ad basem decumbens; foliis 2–4 cm. latis, 4.5–10 cm. longis, anguste ovatis, subrevolutis subintegrisque, apice subacuminata, basi cuneata, in petiolum decurrentia; petiolis 2–3 cm. longis, setoso-puberulentis; spicis 2–6 cm. longis, circa 1 cm. latis; bracteis lanceolatis vel alte oblanceolatis, 2–3 cm. latis, 8–9 mm. longis, acuminatis; calycis lobis viridibus, linearibus, 1 mm. latis, 8 mm. longis, acuminatis; corolla puberulenta, 17 mm. longa; staminibus corollae subaequalibus; capsulis puberulentis, circa 5 mm. longis, recurvis.

Perennial herb, somewhat trailing, decumbent at base, minutely subappressed setose; stem slender, branched, striate, quadrangular above; internodes 5 to 7 cm. long; leaves petiolate, 2 to 4 cm. broad, 4.5 to 10 cm. long, narrowly ovate, subrevolute and subentire at margin, tapering at both ends, apex acute to subacuminate, base cuneate, long decurrent on the petiole, finely and sparsely setose-puberulent above and below, pale green and with an almost metallic lustre when dry; flowering branches from the axils of the uppermost leaves, with a single short-peduncled spike or with several subsessile spikes; spikes 2 to 6 cm. long, about 1 cm. broad; bracts lanceolate to broadly oblanceolate, 2 to 3 mm. broad, 8 to 9 mm. long, acuminate, sparsely pilose on the outer surface, glabrous on the inner surface, ciliate, pinnate-veined with

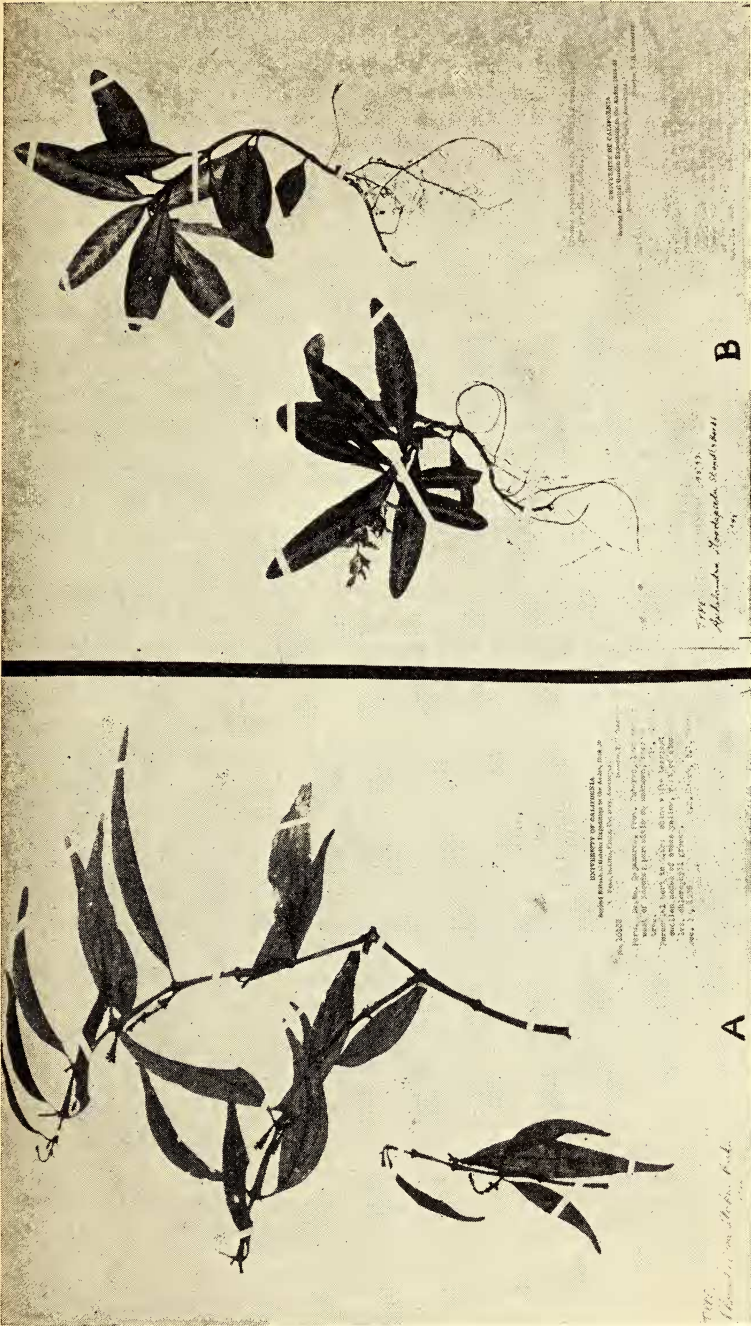


PLATE 21. TYPES OF SOUTH AMERICAN PLANTS. A. *Phoradendron Storkii* Barkl. B. *Aphelandra Goodspeedii* Standl. and Barkl. (Deposited in the Herbarium of Chicago Natural History Museum.)

about 3 pairs of veins; calyx-tube essentially obsolete, calyx lobes green, linear, 1 mm. broad, 8 mm. long, acuminate, glabrous on inner surface, pilose on outer surface, ciliate; corolla puberulent, 17 mm. long, white tinged with pink, tube 11 mm. long, 1.5 mm. broad, lobes unequal; stamens nearly as long as the corolla, anthers narrow, 1.5 mm. long; capsule puberulent, greenish, about 5 mm. long, recurved.

Type. Altitude 630 m., Depto. Huánuco, 10 km. downstream from Tingo María, Peru, October 28, 1938, *H. E. Stork & O. B. Horton 9532*. Weedy perennial herb, partly trailing, along edges of forest in partial sun, in forest mold.

This species closely resembles *Beloperone cochabambense* Rusby in general habit and appearance, even to the metallic lustre of its leaves; however, its flowers are only half as long, the leaves somewhat broader, with longer petioles, longer and more slender spikes, and it has narrower and less pilose bracts, as compared to *B. cochabambense*.

Aphelandra Goodspeedii Standley & Barkley, sp. nov. Herba; caulis simplex, subprocumbens, nodis infirmis radicans, setosus; folia spatulato-lanceolata, apice obtusa, basi cuneata, integra vel subintegra, utrinque laxe setosa; spicae terminales, pedunculatae; bracteae imbricatae, adpressae, serratae, pilosae; bracteolae lanceolatae, acuminatae; sepalis lanceolatis, striatis.

Prostrate perennial herb up to 15 cm. high, the stem simple, subscenting, rooting at the lower nodes, setose, the hairs subappressed; petioles 2 to 4 mm. long, densely pilose; lamina spatulate to lanceolate, 30 to 80 mm. long, 9 to 20 mm. wide, obtusely rounded at apex, cuneate and decurrent at base, entire or subundulate, when dry bluish above, grayish below, except whitish along costa and lateral veins, entire or subundulate, setose on both surfaces but more abundantly so below; flowers borne in one or more terminal spikes about 4.5 cm. long; the peduncle about 8 mm. long, pilose like the rachis, stem, and petioles; bracts green, lanceolate, acuminate, repand-serrate toward summit with about five pairs of teeth, 3 mm. wide, 12 mm. long, in fruit ovate-lanceolate, about 4 mm. wide, 12 mm. long, hirsute on the outer surface; bractlets lanceolate, acuminate, entire, puberulent, membranaceous-subhyaline, about 4.5 mm. long; calyx segments lanceolate, acuminate, entire, minutely ciliate on the margins, subhyaline, delicately striate-nerved, about 4.5 mm. long, 1 mm. wide; capsules about 7.5 mm. long, glabrous, seed four, the valves of the capsule recurved after dehiscence.

Type. Altitude 630 meters, Depto. and Prov. Huánuco, 10 km. downstream from Tingo María, Peru, November 2, 1938, *H. E. Stork & O. B. Horton 9597*.

This species appears to be closely related to *Aphelandra ornata* T. Anders. and *A. Seibertii* Leonard. *A. ornata* is a more upright

plant, the leaves broadly lanceolate, subacute, glabrous except on the veins and with petioles about 15 mm. long, and the bracts are ovate with more and finer serrations. *A. Seibertii* has longer pilose stems, petioles, and inflorescence rachis, much larger ovate leaves, with finer and more abundant pubescence, and the bracts are much broader.

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NOTES ON PACIFIC COAST MARINE ALGAE

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Data concerning the distribution of marine algae on the Pacific Coast of North America are found chiefly in the various papers of Setchell and Gardner and in the more recent works of Smith (1944) and Dawson (1946). In the present paper the known range of a number of species is extended as a result of collections by the writer extending over a period of years. Unless otherwise indicated, the place records are from the coast of southern California and collection numbers are those of the writer.

CHLOROPHYCEAE

ULVELLA SETCHELLII Dangeard, south of Redondo Beach, January, 1936, 1249; Corona del Mar, March, 1938, 2243b. This species, previously reported from Pacific Grove on the coast of central California (see Smith, 1944), is probably widely distributed along the coast. In both of the above collections as well as at various other times, this plant was found endophytic in the outer wall of *Amplisiphonia pacifica* Hollenberg, although it is apparently not limited to this host. Dangeard (1931) reported the Californian material of this species as growing in or on the wall of *Laurencia* sp. Observations on living material and paraffine sections indicate that the Pacific Coast plant is endophytic, except in the very early stages of its development. The endophytic habit might be considered as reason for questioning the propriety of this generic designation.

RHIZOCLONIUM RIPARIUM (Roth) Harvey, Corona del Mar, May, 1936, 1386; Balboa Harbor, December, 1936, 1928.5. Previous records are from Carmel along the coast of central California and northward (Setchell and Gardner, 1920). In the case of the first of these collections the plant formed extensive brownish masses on rocks in the midlittoral zone.